



SEQUENCE LISTING

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<120> Methods of Controlling Gene Expression

<130> PB/5-31481A

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<160> 38

<170> PatentIn Ver. 2.1

<210> 1

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<212> DNA

<213> Arabidopsis thaliana

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<213> Arabidopsis thaliana

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Leu Ala Ile Asp Ala Ile Glu Ala Ser Tyr Asn Phe Ser Arg Ser Ser
      20             25             30

Ser Ser Ser Ser Ser Ala Ala Pro Thr Val Gln Ala Thr Thr Ser Val
 35             40             45
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His Gly His Glu Glu Asp Pro Asn Gln Ile Pro Asn Asn Ile Arg Arg
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 Gln Leu Pro Arg Ser Ile Thr Ser Ser Thr Ser Tyr Lys Arg Phe Pro
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 Leu Ser Arg Cys Arg Ala Arg Asn Phe Pro Ala Met Arg Phe Gly Gly
 85 90 95
 Arg Ile Leu Tyr Ser Lys Thr Ala Thr Glu Val Asp Lys Arg Ala Met
 100 105 110
 Gln Leu Ile Lys Val Leu Asp Thr Lys Arg Asp Glu Ser Gly Ile Ala
 115 120 125
 Phe Val Gly Leu Asp Ile Glu Trp Arg Pro Ser Phe Arg Lys Gly Val
 130 135 140
 Leu Pro Gly Lys Val Ala Thr Val Gln Ile Cys Val Asp Ser Asn Tyr
 145 150 155 160
 Cys Asp Val Met His Ile Phe His Ser Gly Ile Pro Gln Ser Leu Gln
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 His Leu Ile Glu Asp Ser Thr Leu Val Lys Val Gly Ile Gly Ile Asp
 180 185 190
 Gly Asp Ser Val Lys Leu Phe His Asp Tyr Gly Val Ser Ile Lys Asp
 195 200 205
 Val Glu Asp Leu Ser Asp Leu Ala Asn Gln Lys Ile Gly Gly Asp Lys
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 Lys Trp Gly Leu Ala Ser Leu Thr Glu Thr Leu Val Cys Lys Glu Leu
 225 230 235 240
 Leu Lys Pro Asn Arg Ile Arg Leu Gly Asn Trp Glu Phe Tyr Pro Leu
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 Ser Lys Gln Gln Leu Gln Tyr Ala Ala Thr Asp Ala Tyr Ala Ser Trp
 260 265 270
 His Leu Tyr Lys Val Thr Thr Thr Lys Asn His Leu Leu Thr Leu Asn
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 Cys Arg Lys Pro Gly Gly Tyr Leu Arg
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<210> 3

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<212> DNA

<213> Arabidopsis thaliana

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gttgctgcaa acaaagaata ccaaaaagca gactggagaa taagaccctc tccagatgta 780
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<210> 4

<211> 642

<212> PRT

<213> Arabidopsis thaliana

<400> 4

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      20             25             30

Lys Gly Phe Ala Lys Phe Gly Lys Ala Glu Val Pro Phe His Ile Pro
      35             40             45

Thr Leu Thr Lys Pro Gln Glu Glu Tyr Lys Ile Leu Val Asp Asn Ala
 50             55             60

Asn Asn Pro Phe Glu His Val Leu Leu Glu Lys Ser Glu Asp Gly Leu
 65             70             75             80

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Arg Phe Ile His Pro Leu Glu Glu Leu Ser Val Met Asp Phe Val Asp
 85 90 95
 Arg Asn Leu Ser Glu Met Arg Pro Val Lys Pro Leu Pro Leu Glu Glu
 100 105 110
 Thr Pro Phe Lys Leu Val Glu Glu Val Lys Asp Leu Glu Asp Leu Ala
 115 120 125
 Ala Ala Leu Gln Ser Val Glu Glu Phe Ala Val Asp Leu Glu His Asn
 130 135 140
 Gln Tyr Arg Thr Phe Gln Gly Leu Thr Cys Leu Met Gln Ile Ser Thr
 145 150 155 160
 Arg Thr Glu Asp Tyr Ile Val Asp Ile Phe Lys Leu Trp Asp His Ile
 165 170 175
 Gly Pro Tyr Leu Arg Glu Leu Phe Lys Asp Pro Lys Lys Lys Lys Val
 180 185 190
 Ile His Gly Ala Asp Arg Asp Ile Ile Trp Leu Gln Arg Asp Phe Gly
 195 200 205
 Ile Tyr Val Cys Asn Leu Phe Asp Thr Gly Gln Ala Ser Arg Val Leu
 210 215 220
 Lys Leu Glu Arg Asn Ser Leu Glu Phe Leu Leu Lys His Tyr Cys Gly
 225 230 235 240
 Val Ala Ala Asn Lys Glu Tyr Gln Lys Ala Asp Trp Arg Ile Arg Pro
 245 250 255
 Leu Pro Asp Val Met Lys Arg Tyr Ala Arg Glu Asp Thr His Tyr Leu
 260 265 270
 Leu Tyr Ile Tyr Asp Val Met Arg Met Glu Leu His Thr Met Ala Lys
 275 280 285
 Glu Asp Glu Gln Ser Asp Ser Pro Leu Val Glu Val Tyr Lys Arg Ser
 290 295 300
 Tyr Asp Val Cys Met Gln Leu Tyr Glu Lys Glu Leu Trp Thr Arg Asp
 305 310 315 320
 Ser Tyr Leu His Val Tyr Gly Val Gln Thr Gly Asn Leu Asn Ala Val
 325 330 335
 Gln Leu Ser Ile Val Ala Leu Gln Gly Leu Cys Glu Trp Arg Asp Arg
 340 345 350
 Ile Ala Arg Ala Asp Asp Glu Ser Thr Gly Tyr Val Leu Pro Asn Lys
 355 360 365
 Thr Leu Phe Asp Ile Ala Lys Glu Met Pro Ile Val Val Ala Gln Leu
 370 375 380

Arg Arg Leu Leu Lys Ser Lys Leu Pro Tyr Leu Glu Arg Asn Phe Asp
 385 390 395 400
 Ala Val Ile Ser Val Ile Arg Arg Ser Met Gln Asn Ala Ala Ala Phe
 405 410 415
 Glu Pro Val Val Gln Ser Leu Lys Asp Arg Arg Pro Glu Thr Val Val
 420 425 430
 Glu Met Asn Ile Glu Pro Lys Ile Glu Lys Thr Asp Thr Gly Ala Ser
 435 440 445
 Ala Ser Ser Leu Ser Leu Glu Lys Val Cys Val Asp Asp Ser Lys Lys
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 Gln Ser Ser Gly Phe Gly Val Leu Pro Leu Lys Arg Lys Leu Glu Ser
 465 470 475 480
 Asp Lys Thr Val Val Glu Lys Asn Ile Glu Pro Lys Ile Glu Lys Thr
 485 490 495
 Gly Thr Glu Ala Ser Ala Ser Ser Leu Ser Ser Lys Lys Val Cys Val
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 Asp Asp Ser Lys Lys Gln Ser Ser Gly Phe Gly Val Leu Leu Ser Lys
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 Arg Lys Phe Glu Ser Asp Asn Lys Lys Leu Gln Val Lys Glu Glu Val
 530 535 540
 Lys Val Ser Lys Ser Lys Pro Asp Lys Val Ile Ile Val Val Asp Asp
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 Ala Asp Ala Leu Asp Arg Val Ser Glu Thr Pro Ser Lys Gly Ser Pro
 580 585 590
 Ser Leu Thr Gln Lys Pro Lys Thr Cys Asn Thr Glu Val Ile Val Leu
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<212> DNA

<213> Arabidopsis thaliana

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<213> Arabidopsis thaliana

<400> 6

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          20                      25                      30

Leu Glu Asn Pro Gln Ile Glu Phe Gly Phe Leu Arg Gly Glu Cys Ser
          35                      40                      45

Leu Glu Met Ser Asp Ser Tyr Val Trp Val Glu Thr Glu Ser Gln Leu
          50                      55                      60

Lys Glu Leu Ala Glu Ile Leu Ala Lys Glu Gln Val Phe Ala Val Asp
          65                      70                      75                      80

Thr Glu Gln His Ser Leu Arg Ser Phe Leu Gly Phe Thr Ala Leu Ile
          85                      90                      95

Gln Ile Ser Thr His Glu Glu Asp Phe Leu Val Asp Thr Ile Ala Leu
          100                     105                     110

His Asp Val Met Ser Ile Leu Arg Pro Val Phe Ser Asp Pro Asn Ile
          115                     120                     125

Cys Lys Val Phe His Gly Ala Asp Asn Asp Val Ile Trp Leu Gln Arg
          130                     135                     140

Asp Phe His Ile Tyr Val Val Asn Met Phe Asp Thr Ala Lys Ala Cys
          145                     150                     155                     160

Glu Val Leu Ser Lys Pro Gln Arg Ser Leu Ala Tyr Leu Leu Glu Thr
          165                     170                     175

Val Cys Gly Val Ala Thr Asn Lys Leu Leu Gln Arg Glu Asp Trp Arg
          180                     185                     190
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Gln Arg Pro Leu Ser Glu Glu Met Val Arg Tyr Ala Arg Thr Asp Ala
 195 200 205

His Tyr Leu Leu Tyr Ile Ala Asp Ser Leu Thr Thr Glu Leu Lys Gln
 210 215 220

Leu Ala Thr Gly Arg His Leu Cys Tyr Gly Glu Thr Phe
 225 230 235

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<212> DNA

<213> Arabidopsis thaliana

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<212> PRT

<213> Arabidopsis thaliana

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Gly Gly Glu Val Ile Met Lys Ala Cys Lys Pro Ala Leu Glu Ser Asn
 20 25 30

Tyr Ile Thr Lys Val Ile His Asp Cys Lys Arg Asp Ser Glu Ala Leu
 35 40 45

Tyr Phe Gln Phe Gly Ile Arg Leu His Asn Val Val Asp Thr Gln Ile
 50 55 60

Ala Tyr Ser Leu Ile Glu Glu Gln Glu Gly Arg Arg Arg Pro Leu Asp
 65 70 75 80

Asp Tyr Ile Ser Phe Val Ser Leu Leu Ala Asp Pro Arg Tyr Cys Gly
 85 90 95

Ile Ser Tyr Glu Glu Lys Glu Glu Val Arg Val Leu Met Arg Gln Asp
 100 105 110
 Pro Lys Phe Trp Thr Tyr Arg Pro Met Thr Glu Leu Met Ile Arg Ala
 115 120 125
 Ala Ala Asp Asp Val Arg Phe Leu Leu Tyr Leu Tyr His Lys Met Met
 130 135 140
 Gly Lys Leu Asn Gln Arg Ser Leu Trp His Leu Ala Val Arg Gly Ala
 145 150 155 160
 Leu Tyr Cys Arg Cys Leu Cys Cys Met Asn Asp Ala Asp Phe Ala Asp
 165 170 175
 Trp Pro Thr Val Pro Pro Ile Pro Val Phe Leu Val Lys Val Val Tyr
 180 185 190
 Ala Val Glu Thr Lys Lys Lys Arg Arg Val Thr Leu Ala Ser Ile Gly
 195 200 205
 Leu Leu Ile Val Val Gly Leu Leu Asn Val Ala Asp Asn Leu Lys Ser
 210 215 220
 Glu Asp Gln Cys Leu Glu Glu Glu Ile Leu Ser Val Leu Asp Val Pro
 225 230 235 240
 Pro Gly Lys Met Gly Arg Val Ile Gly Arg Lys Gly Ala Ser Ile Leu
 245 250 255
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<210> 9

<211> 720

<212> DNA

<213> Arabidopsis thaliana

<400> 9

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 35 40 45
 Arg Leu Arg Ser Ser His Pro Leu Val Val Gly Leu Asp Val Gln Trp
 50 55 60
 Thr Pro Gly Gly Ser Asp Pro Pro Pro Asp Ile Leu Gln Leu Cys Val
 65 70 75 80
 Gly Asn Arg Cys Leu Ile Ile Gln Leu Ser His Cys Lys Arg Ile Pro
 85 90 95
 Glu Val Leu Arg Ser Phe Leu Glu Asp Glu Thr Ile Thr Phe Val Gly
 100 105 110
 Val Trp Asn Ser Gln Asp Gln Gly Lys Leu Glu Arg Phe Arg His Gln
 115 120 125
 Leu Glu Ile Trp Arg Leu Leu Asp Ile Arg His Tyr Leu Pro Thr Arg
 130 135 140
 Leu Leu Asn Ser Ser Phe Glu Lys Ile Val Glu Glu Cys Leu Gly Tyr
 145 150 155 160
 Lys Gly Val Arg Lys Asp Lys Glu Ile Cys Met Ser Asn Trp Gly Ala
 165 170 175
 Arg Ser Leu Ser His Asp Gln Ile Val Gln Ala Ser Asp Asp Val Tyr
 180 185 190
 Val Cys Cys Lys Leu Gly Val Lys Glu Cys Ile Trp Lys Glu Arg Ser
 195 200 205
 Asn Val Lys Glu Arg Ile Trp Lys Glu Ser Ser Asn Val Lys Glu His
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 Ile Trp Lys Glu Ser Ser Lys Leu Tyr Phe Val Gly Val Cys Phe
 225 230 235

<210> 11
 <211> 654
 <212> DNA
 <213> Arabidopsis thaliana

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acgattgtga aggtgtatct ggggcatgaa ggagtgcga aagataagga gttatgtatg 540
agtaattggg gtgctcgtag cctctctcat gatcagatag tacaagcgtc acatgatgtc 600
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<210> 12
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<213> Arabidopsis thaliana

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Ser Ser Leu His His His Tyr His Glu His His Val Asp Phe Phe Gly
      20             25             30

Glu Arg Leu Ile Val Thr Val Thr His Thr Pro Ser Val Ile Arg Arg
      35             40             45

Trp Ile His Ser Ile Arg Phe Val Ser Arg Leu Arg Leu Ser His Pro
      50             55             60

Leu Val Val Gly Leu Gly Val Gln Trp Thr Pro Arg Gly Ser Asp Pro
      65             70             75             80

Pro Pro Asp Ile Leu Gln Leu Cys Val Gly Thr Arg Cys Leu Ile Ile
      85             90             95

Gln Leu Ser His Cys Lys Tyr Val Pro Asp Val Leu Arg Ser Phe Leu
      100            105            110

Glu Asp Gln Thr Ile Thr Phe Val Gly Val Trp Asn Ser Gln Asp Lys
      115            120            125

Asp Lys Leu Glu Arg Phe His His Gln Leu Asp Ile Trp Arg Leu Val
      130            135            140

His Ile Arg His Tyr Leu His Pro Leu Leu Leu Ser Ser Ser Phe Glu
      145            150            155            160

Thr Ile Val Lys Val Tyr Leu Gly His Glu Gly Val Thr Lys Asp Lys
      165            170            175

Glu Leu Cys Met Ser Asn Trp Gly Ala Arg Ser Leu Ser His Asp Gln
      180            185            190

Ile Val Gln Ala Ser His Asp Val Tyr Val Cys Cys Lys Leu Gly Val

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195
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 210 215

200

205

<210> 13
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 <213> Arabidopsis thaliana

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 ctaataaaat tgattgataa gcaagccatc tttcctcaat cagagcaact gatgatctac 180
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<210> 14
 <211> 86
 <212> PRT
 <213> Arabidopsis thaliana

<400> 14
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 35 40 45
 Ala Ile Phe Pro Gln Ser Glu Gln Leu Met Ile Tyr Ala Met Thr Arg
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 Ala Ser Lys Ser Gly Leu His Arg Val Val Glu Ile Lys Pro Ser Ile
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<210> 15
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 <212> DNA
 <213> C. elegans

<400> 15
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 ttaaaagagt cgggacagga gacggagctc agacagaaat atctgactgg aactattcaa 360
 ataaacgcct tagatgtgtg cacaattgga caaaagcagc ttctcagtga aatcttcgat 420

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Ile	Ser	Glu	Trp	Gly	His	Asp	Phe	Arg	Asp	Ser	Phe	Arg	Lys	Leu	Gly
		675					680					685			
Ser	Leu	Lys	Thr	Ala	Leu	Pro	Met	Val	Pro	Ile	Val	Ala	Leu	Thr	Ala
	690					695					700				
Thr	Ala	Ser	Ser	Ser	Ile	Arg	Glu	Asp	Ile	Val	Arg	Cys	Leu	Asn	Leu
705					710					715					720
Arg	Asn	Pro	Gln	Ile	Thr	Cys	Thr	Gly	Phe	Asp	Arg	Pro	Asn	Leu	Tyr
				725					730					735	
Leu	Glu	Val	Arg	Arg	Lys	Thr	Gly	Asn	Ile	Leu	Gln	Asp	Leu	Gln	Pro
			740					745					750		
Phe	Leu	Val	Lys	Thr	Ser	Ser	His	Trp	Glu	Phe	Glu	Gly	Pro	Thr	Ile
		755					760					765			
Ile	Tyr	Cys	Pro	Ser	Arg	Lys	Met	Thr	Gln	Gln	Val	Thr	Gly	Glu	Leu
	770					775					780				
Arg	Lys	Leu	Asn	Leu	Ser	Cys	Gly	Thr	Tyr	His	Ala	Gly	Met	Ser	Phe
785					790					795					800
Ser	Thr	Arg	Lys	Asp	Ile	His	His	Arg	Phe	Val	Arg	Asp	Glu	Ile	Gln

805										810					815				
Cys	Val	Ile	Ala	Thr	Ile	Ala	Phe	Gly	Met	Gly	Ile	Asn	Lys	Ala	Asp				
			820					825					830						
Ile	Arg	Gln	Val	Ile	His	Tyr	Gly	Ala	Pro	Lys	Asp	Met	Glu	Ser	Tyr				
		835					840					845							
Tyr	Gln	Glu	Ile	Gly	Arg	Ala	Gly	Arg	Asp	Gly	Leu	Gln	Ser	Ser	Cys				
	850					855					860								
His	Val	Leu	Trp	Ala	Pro	Ala	Asp	Ile	Asn	Leu	Asn	Arg	His	Leu	Leu				
865					870					875					880				
Thr	Glu	Ile	Arg	Asn	Glu	Lys	Phe	Arg	Leu	Tyr	Lys	Leu	Lys	Met	Met				
				885					890					895					
Ala	Lys	Met	Glu	Lys	Tyr	Leu	His	Ser	Ser	Arg	Cys	Arg	Arg	Gln	Ile				
			900					905					910						
Ile	Leu	Ser	His	Phe	Glu	Asp	Lys	Gln	Val	Gln	Lys	Ala	Ser	Leu	Gly				
		915					920					925							
Ile	Met	Gly	Thr	Glu	Lys	Cys	Cys	Asp	Asn	Cys	Arg	Ser	Arg	Leu	Asp				
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His	Cys	Tyr	Ser	Met	Asp	Asp	Ser	Glu	Asp	Thr	Ser	Trp	Asp	Phe	Gly				
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Pro	Gln	Ala	Phe	Lys	Leu	Leu	Ser	Ala	Val	Asp	Ile	Leu	Gly	Glu	Lys				
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Phe	Gly	Ile	Gly	Leu	Pro	Ile	Leu	Phe	Leu	Arg	Gly	Ser	Asn	Ser	Gln				
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Arg	Leu	Ala	Asp	Gln	Tyr	Arg	Arg	His	Ser	Leu	Phe	Gly	Thr	Gly	Lys				
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Asp	Gln	Thr	Glu	Ser	Trp	Trp	Lys	Ala	Phe	Ser	Arg	Gln	Leu	Ile	Thr				
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Glu	Gly	Phe	Leu	Val	Glu	Val	Ser	Arg	Tyr	Asn	Lys	Phe	Met	Lys	Ile				
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Cys	Ala	Leu	Thr	Lys	Lys	Gly	Arg	Asn	Trp	Leu	His	Lys	Ala	Asn	Thr				
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Glu	Ser	Gln	Ser	Leu	Ile	Leu	Gln	Ala	Asn	Glu	Glu	Leu	Cys	Pro	Lys				
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Lys	Phe	Leu	Leu	Pro	Ser	Ser	Lys	Thr	Val	Ser	Ser	Gly	Thr	Lys	Glu				
		1075					1080					1085							
His	Cys	Tyr	Asn	Gln	Val	Pro	Val	Glu	Leu	Ser	Thr	Glu	Lys	Lys	Ser				
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1105	1110	1115	1120
Gly Ser Asn Ile Ser Lys Lys Ser Ile Met Val Gln Ser Pro Glu Lys	1125	1130	1135
Ala Tyr Ser Ser Ser Gln Pro Val Ile Ser Ala Gln Glu Gln Glu Thr	1140	1145	1150
Gln Ile Val Leu Tyr Gly Lys Leu Val Glu Ala Arg Gln Lys His Ala	1155	1160	1165
Asn Lys Met Asp Val Pro Pro Ala Ile Leu Ala Thr Asn Lys Ile Leu	1170	1175	1180
Val Asp Met Ala Lys Met Arg Pro Thr Thr Val Glu Asn Val Lys Arg	1185	1190	1195
Ile Asp Gly Val Ser Glu Gly Lys Ala Ala Met Leu Ala Pro Leu Leu	1205	1210	1215
Glu Val Ile Lys His Phe Cys Gln Thr Asn Ser Val Gln Thr Asp Leu	1220	1225	1230
Phe Ser Ser Thr Lys Pro Gln Glu Glu Gln Lys Thr Ser Leu Val Ala	1235	1240	1245
Lys Asn Lys Ile Cys Thr Leu Ser Gln Ser Met Ala Ile Thr Tyr Ser	1250	1255	1260
Leu Phe Gln Glu Lys Lys Met Pro Leu Lys Ser Ile Ala Glu Ser Arg	1265	1270	1275
Ile Leu Pro Leu Met Thr Ile Gly Met His Leu Ser Gln Ala Val Lys	1285	1290	1295
Ala Gly Cys Pro Leu Asp Leu Glu Arg Ala Gly Leu Thr Pro Glu Val	1300	1305	1310
Gln Lys Ile Ile Ala Asp Val Ile Arg Asn Pro Pro Val Asn Ser Asp	1315	1320	1325
Met Ser Lys Ile Ser Leu Ile Arg Met Leu Val Pro Glu Asn Ile Asp	1330	1335	1340
Thr Tyr Leu Ile His Met Ala Ile Glu Ile Leu Lys His Gly Pro Asp	1345	1350	1355
Ser Gly Leu Gln Pro Ser Cys Asp Val Asn Lys Arg Arg Cys Phe Pro	1365	1370	1375
Gly Ser Glu Glu Ile Cys Ser Ser Ser Lys Arg Ser Lys Glu Glu Val	1380	1385	1390
Gly Ile Asn Thr Glu Thr Ser Ser Ala Glu Arg Lys Arg Arg Leu Pro	1395	1400	1405
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<211> 30
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<213> Artificial Sequence

<220>
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Oligonucleotide

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<210> 20
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:
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<210> 21
<211> 1041
<212> DNA
<213> Arabidopsis thaliana

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gttccgattt acattgtgac ggatccgttt caacttcctg ctgatttcct aaacccttct 120
cctgaaaaga aattgggtat cggttttgac tgtgagggtg ttgacctctg ccgacatggg 180
aaactttgta tcatgcagat tgcattctct aatgcaatat acttggttga tgtcatcgaa 240
ggtggagagg tgattatgaa agcgtgtaag cctgcactcg agtctaatta catcacgaaa 300
gttattcacg attgcaagcg tgacagtga gctctatact tccagtttgg gataagattg 360
cacaatgttg tggacactca gattgcttat tctctgattg aagaacaaga agggcgagg 420
agacctctag atgattacat atcgtttggt tcaactcctg ctgatccacg ttactgcggg 480
atatacctatg aagagaaaga agaagttcga gttctcatgc gccaggaccc aaagttttgg 540
acatacaggc ctatgactga gtcctatgat cgcgcagctg ctgatgatgt ccgcttcctt 600
ctgtatctct atcacaaaat gatgggaaag ctaaatcagc ggtcactatg gcatcttgca 660
gttcgtgggtg ctttgtactg tcgggtgtct tgcgtcatga atgatgctga ttttgctgat 720
tgccaaccg ttcctccaat tccagttttc ctcgtaaagg tcgtatatgc tgtagagaca 780
aagaaaaaaa gacgggtgac attagcttcg attgggttac tgattgtagt tggactttta 840
aatgtggcag ataacctgaa gtcagaagat caatgtcttg aagaagagat cctgtcagtg 900
cttgatgttc caccaggaaa gatgggacgt gtgattggaa ggaaaggagc atcgatcctc 960
gccattaagg aagcttgcaa cgcggaatt ctaattggag gggcaaaggg tccacctgat 1020
aaggttagtc ttattccata g 1041

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<211> 346
<212> PRT
<213> Arabidopsis thaliana
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<400> 22

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Pro	Ala	Asp 35	Phe	Leu	Asn	Pro	Ser 40	Pro	Glu	Lys	Lys	Leu 45	Val	Ile	Gly
Phe	Asp 50	Cys	Glu	Gly	Val	Asp 55	Leu	Cys	Arg	His	Gly 60	Lys	Leu	Cys	Ile
Met 65	Gln	Ile	Ala	Phe	Ser 70	Asn	Ala	Ile	Tyr	Leu 75	Val	Asp	Val	Ile	Glu 80
Gly	Gly	Glu	Val	Ile 85	Met	Lys	Ala	Cys	Lys 90	Pro	Ala	Leu	Glu	Ser 95	Asn
Tyr	Ile	Thr	Lys 100	Val	Ile	His	Asp	Cys 105	Lys	Arg	Asp	Ser	Glu 110	Ala	Leu
Tyr	Phe	Gln 115	Phe	Gly	Ile	Arg	Leu 120	His	Asn	Val	Val	Asp 125	Thr	Gln	Ile
Ala	Tyr 130	Ser	Leu	Ile	Glu	Glu 135	Gln	Glu	Gly	Arg	Arg 140	Arg	Pro	Leu	Asp
Asp 145	Tyr	Ile	Ser	Phe	Val 150	Ser	Leu	Leu	Ala	Asp 155	Pro	Arg	Tyr	Cys	Gly 160
Ile	Ser	Tyr	Glu	Glu 165	Lys	Glu	Glu	Val	Arg 170	Val	Leu	Met	Arg	Gln 175	Asp
Pro	Lys	Phe	Trp 180	Thr	Tyr	Arg	Pro	Met 185	Thr	Glu	Leu	Met	Ile 190	Arg	Ala
Ala	Ala	Asp 195	Asp	Val	Arg	Phe	Leu 200	Leu	Tyr	Leu	Tyr	His 205	Lys	Met	Met
Gly	Lys 210	Leu	Asn	Gln	Arg	Ser 215	Leu	Trp	His	Leu	Ala 220	Val	Arg	Gly	Ala
Leu 225	Tyr	Cys	Arg	Cys	Leu 230	Cys	Cys	Met	Asn	Asp 235	Ala	Asp	Phe	Ala	Asp 240
Trp	Pro	Thr	Val	Pro 245	Pro	Ile	Pro	Val	Phe 250	Leu	Val	Lys	Val	Val 255	Tyr
Ala	Val	Glu	Thr 260	Lys	Lys	Lys	Arg	Arg 265	Val	Thr	Leu	Ala	Ser 270	Ile	Gly

Leu Leu Ile Val Val Gly Leu Leu Asn Val Ala Asp Asn Leu Lys Ser
 275 280 285
 Glu Asp Gln Cys Leu Glu Glu Glu Ile Leu Ser Val Leu Asp Val Pro
 290 295 300
 Pro Gly Lys Met Gly Arg Val Ile Gly Arg Lys Gly Ala Ser Ile Leu
 305 310 315 320
 Ala Ile Lys Glu Ala Cys Asn Ala Glu Ile Leu Ile Gly Gly Ala Lys
 325 330 335
 Gly Pro Pro Asp Lys Val Ser Leu Ile Pro
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 <211> 1049
 <212> DNA
 <213> Arabidopsis thaliana

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 atttctcccg ttcttcttct tcttcttctt ctgctgctcc gaccgtacaa gctacaacct 180
 ccgtccatgg ccacgaggag gatccaaatc aaatccccaa taatatccgt cgccaattgc 240
 ctggttccat cacttcttct acatcttata aacgatttcc tctctcccgt tgccgagcta 300
 ggaattttcc agcaatgagg tttggtggta ggattttgta tagcaagact gctactgagg 360
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 tagcttttgt tggcttgat attgagtggg gaccaagttt tagaaaagggt gttctcccgg 480
 ggaaggttgc gactgtccag atatgtgtag atagtaatta ttgtgatgtt atgcatattt 540
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 taggtattgg aattgatggg gactctgtga agcttttcca tgactatgga gttagtatca 660
 aagatgttga ggatctttca gatttagcca accaaaaaat tgggtggagat aaaaaatggg 720
 gccttgccct actaactgag acacttggtt gcaaagagct cctgaagcca aacagaatca 780
 ggcttgggaa ctgggagttt tctctctgtt caaagcagca gttacaatac gcagcaacgg 840
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 <211> 288
 <212> PRT
 <213> Arabidopsis thaliana

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 35 40 45

His Gly His Glu Glu Asp Pro Asn Gln Ile Pro Asn Asn Ile Arg Arg
 50 55 60
 Gln Leu Pro Arg Ser Ile Thr Ser Ser Thr Ser Tyr Lys Arg Phe Pro
 65 70 75 80
 Leu Ser Arg Cys Arg Ala Arg Asn Phe Pro Ala Met Arg Phe Gly Gly
 85 90 95
 Arg Ile Leu Tyr Ser Lys Thr Ala Thr Glu Val Asp Lys Arg Ala Met
 100 105 110
 Gln Leu Ile Lys Val Leu Asp Thr Lys Arg Asp Glu Ser Gly Ile Ala
 115 120 125
 Phe Val Gly Leu Asp Ile Glu Trp Arg Pro Ser Phe Arg Lys Gly Val
 130 135 140
 Leu Pro Gly Lys Val Ala Thr Val Gln Ile Cys Val Asp Ser Asn Tyr
 145 150 155 160
 Cys Asp Val Met His Ile Phe His Ser Gly Ile Pro Gln Ser Leu Gln
 165 170 175
 His Leu Ile Glu Asp Ser Thr Leu Val Lys Val Gly Ile Gly Ile Asp
 180 185 190
 Gly Asp Ser Val Lys Leu Phe His Asp Tyr Gly Val Ser Ile Lys Asp
 195 200 205
 Val Glu Asp Leu Ser Asp Leu Ala Asn Gln Lys Ile Gly Gly Asp Lys
 210 215 220
 Lys Trp Gly Leu Ala Ser Leu Thr Glu Thr Leu Val Cys Lys Glu Leu
 225 230 235 240
 Leu Lys Pro Asn Arg Ile Arg Leu Gly Asn Trp Glu Phe Tyr Pro Leu
 245 250 255
 Ser Lys Gln Gln Leu Gln Tyr Ala Ala Thr Asp Ala Tyr Ala Ser Trp
 260 265 270
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<210> 25

<211> 22

<212> DNA

<213> Description of Artificial Sequence:
Oligonucleotide

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22

<210> 26
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 <213> Description of Artificial Sequence:
 Oligonucleotide

<400> 26
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<210> 27
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 <213> Description of Artificial Sequence:
 Oligonucleotide

<400> 27
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<210> 28
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 <213> Description of Artificial Sequence:
 Oligonucleotide
 Other n=a, c, g, or t

<400> 28
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<210> 29
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 Oligonucleotide

<400> 29
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 <213> Description of Artificial Sequence:
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<400> 30
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<210> 31
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<210> 32
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 <400> 32
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<210> 34
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 Oligonucleotide

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<210> 35
 <211> 1749
 <212> DNA
 <213> Arabidopsis thaliana

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 TACCTACTCA AAGAATGCTA TAAACATGGT AGCTTGAAGG CAACAAAAAA GTTCCAAGCT 180
 TTACAGTATC AAGTTCATCG AGTTCCTAGCT AATAAACCTC AACCCAGGACC TGCTACTTTC 240
 ATTATTAATT GTCTCACTTT ACTTCCTTTA TTTGGGGTAT ATGGTGAAGG CTTTAGTCAT 300
 TTAGTTATAT CAGCTCTTCG CCGCTTCTTT AAAACAGTAT CTGAACCAAC TAGTGAAGAA 360
 GATATTTGTT TGGCGAGAAA GCTAGCTGCT CAGTTCCTCC TTGCTACTGT TGGTGGATCT 420
 TTAACCTATG ATGAGAAGGT TATGGTGATC ACTCTTAGAG TGTTTGATGT GAGGTTAACT 480
 AGTATCGATG AAGCCTTGTC TATCTCGGAA GTTTGGCAGA GATATGGGTT TGCTTGTGGA 540
 AATGCGTTTC TGGAACAATA CATTCTCTGAC TTGATCAAGT CGAAATCTTT CATGACGGCT 600
 GTGACTCTGT TAGAGCATTT CTCTTTCCGT TTCCTGGAG AAACCTTTCT TCAACAAATG 660
 GTTGAGGATA AAAATTTCCA AGCTGCAGAG AGATGGGCTA CCTTCATGGG AAGGCCAAGT 720
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 GTTGATGAAC TGTGCGATCG ATATTCACCT CAAGGGCTGC CAAAAGCACG AGAGGCTGAG 1020
 GTTGCTTTTG TTGAAAAAAG CTTTCTGCGT CTCACGATC TAGCTGTAGA AGATGTAGTT 1080
 TGGGTTGATG AAGTCAACGA GTTGAGAAAA GCAACTTCTT TTCTTGAAGG ATGTAGAGTT 1140
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 TCAATCATGC AAATTGGATC TGATAACAAA ATTTTCATAT TGGACTTGAT AAAGCTTTAC 1260
 AATGACGCCCT CTGAAATTCT GGACAACCTG CTTAGTCACA TTTTGCAATC GAAGAGTACA 1320
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CACATATTTT GCCATGTTTC CGATCATCCT CCACATGACA GTAGTTCAGA GACAACCCAG 1680
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<212> PRT
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His Gly Ser Leu Lys Ala Thr Lys Lys Phe Gln Ala Leu Gln Tyr Gln
50 55 60
Val His Arg Val Leu Ala Asn Lys Pro Gln Pro Gly Pro Ala Thr Phe
65 70 75 80
Ile Ile Asn Cys Leu Thr Leu Leu Pro Leu Phe Gly Val Tyr Gly Glu
85 90 95
Gly Phe Ser His Leu Val Ile Ser Ala Leu Arg Arg Phe Phe Lys Thr
100 105 110
Val Ser Glu Pro Thr Ser Glu Glu Asp Ile Cys Leu Ala Arg Lys Leu
115 120 125
Ala Ala Gln Phe Phe Leu Ala Thr Val Gly Gly Ser Leu Thr Tyr Asp
130 135 140
Glu Lys Val Met Val His Thr Leu Arg Val Phe Asp Val Arg Leu Thr
145 150 155 160
Ser Ile Asp Glu Ala Leu Ser Ile Ser Glu Val Trp Gln Arg Tyr Gly
165 170 175
Phe Ala Cys Gly Asn Ala Phe Leu Glu Gln Tyr Ile Ser Asp Leu Ile
180 185 190
Lys Ser Lys Ser Phe Met Thr Ala Val Thr Leu Leu Glu His Phe Ser
195 200 205
Phe Arg Phe Pro Gly Glu Thr Phe Leu Gln Gln Met Val Glu Asp Lys
210 215 220
Asn Phe Gln Ala Ala Glu Arg Trp Ala Thr Phe Met Gly Arg Pro Ser
225 230 235 240

Leu Cys Ile Leu Val Gln Glu Tyr Gly Ser Arg Asn Met Leu Lys Gln
 245 250 255
 Ala Tyr Asn Ile Ile Asn Lys Asn Tyr Leu Gln His Asp Phe Pro Glu
 260 265 270
 Leu Tyr His Lys Cys Lys Glu Ser Ala Leu Lys Val Leu Ala Glu Lys
 275 280 285
 Ala Cys Trp Asp Val Ala Glu Ile Lys Thr Lys Gly Asp Arg Gln Leu
 290 295 300
 Leu Lys Tyr Leu Val Tyr Leu Ala Val Glu Ala Gly Tyr Leu Glu Lys
 305 310 315 320
 Val Asp Glu Leu Cys Asp Arg Tyr Ser Leu Gln Gly Leu Pro Lys Ala
 325 330 335
 Arg Glu Ala Glu Val Ala Phe Val Glu Lys Ser Phe Leu Arg Leu Asn
 340 345 350
 Asp Leu Ala Val Glu Asp Val Val Trp Val Asp Glu Val Asn Glu Leu
 355 360 365
 Arg Lys Ala Thr Ser Phe Leu Glu Gly Cys Arg Val Val Gly Ile Asp
 370 375 380
 Cys Glu Trp Lys Pro Asn Tyr Ile Lys Gly Ser Lys Gln Asn Lys Val
 385 390 395 400
 Ser Ile Met Gln Ile Gly Ser Asp Thr Lys Ile Phe Ile Leu Asp Leu
 405 410 415
 Ile Lys Leu Tyr Asn Asp Ala Ser Glu Ile Leu Asp Asn Cys Leu Ser
 420 425 430
 His Ile Leu Gln Ser Lys Ser Thr Leu Lys Leu Val Ser Leu Thr Glu
 435 440 445
 Asp Tyr Pro Asp His Lys Leu Ser Ser Gly Tyr Asn Phe Gln Cys Asp
 450 455 460
 Ile Lys Gln Leu Ala Leu Ser Tyr Gly Asp Leu Lys Cys Phe Glu Arg
 465 470 475 480
 Tyr Asp Met Leu Leu Asp Ile Gln Asn Val Phe Asn Glu Pro Phe Gly
 485 490 495
 Gly Leu Ala Gly Leu Thr Lys Lys Ile Leu Gly Val Ser Leu Asn Lys
 500 505 510
 Thr Arg Arg Asn Ser Asp Trp Glu Gln Arg Pro Leu Ser Gln Asn Gln
 515 520 525
 Leu Glu Tyr Ala Ala Leu Asp Ala Ala Val Leu Ile His Ile Phe Arg
 530 535 540

His Val Arg Asp His Pro Pro His Asp Ser Ser Ser Glu Thr Thr Gln
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Trp Lys Ser His Ile Val Ser Thr Ser Tyr Lys Ser Pro Tyr Leu Ser
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Ser Asp Asn Ser Arg Arg
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<211> 1518

<212> DNA

<213> Arabidopsis thaliana

<400> 37

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CACTCCAATA	CGTCGTCGTT	TCCGACCGTC	ACTCTCCTCC	AAGTCGCATG	CCGACTCAGT	180
CACGCCACGG	ATGTCTCCGA	TGTCTTCCTC	ATTGATTGA	GTTTCGATTCA	TCTTCCATCG	240
GTTTGGGAGC	TGTTGAATGA	TATGTTTCGTG	TCGCCGGATG	TTCTGAAACT	AGGGTTTCGG	300
TTTAAACAGG	ATTTGGTTTA	CTTGTCCTCG	ACATTTACTC	AACATGGATG	TGAAGGTGGA	360
TTCCAAGAGG	TGAAACAATA	CTTGATATT	ACAAGCATAT	ACAATTATCT	GCAACATAAG	420
CGGTTTGGGA	GAAAGGCGCC	AAAGGATATC	AAGAGCTTGG	CTGCTATATG	TAAGGAAATG	480
CTGGACATCT	CTCTCTCAAA	GGAACCTCAA	TGTAGTGATT	GGTCATATCG	TCCTCTTACA	540
GAAGAACAGA	AACTATACGC	TGCCACAGAT	GCTCACTGCC	TGCTCCAGAT	ATTCGATGTA	600
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GATGCTGCAA	TCCCACACTC	AAAGAAGCCG	GATTCAAGGG	AGTTGCTTGA	TCAAGCATTC	1140
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GAGACTTTCC	AGCTAAAGAT	CAGCGGAAAT	CAGCTGATGT	CCAGATGTAC	GAAAGTCAAT	1320
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35 40 45

Thr Val Thr Leu Leu Gln Val Ala Cys Arg Leu Ser His Ala Thr Asp

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Val	Ser	Asp	Val	Phe	Leu	Ile	Asp	Leu	Ser	Ser	Ile	His	Leu	Pro	Ser
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Val	Trp	Glu	Leu	Leu	Asn	Asp	Met	Phe	Val	Ser	Pro	Asp	Val	Leu	Lys
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Thr	Gln	His	Gly	Cys	Glu	Gly	Gly	Phe	Gln	Glu	Val	Lys	Gln	Tyr	Leu
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Lys	Ala	Pro	Lys	Asp	Ile	Lys	Ser	Leu	Ala	Ala	Ile	Cys	Lys	Glu	Met
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Leu	Asp	Ile	Ser	Leu	Ser	Lys	Glu	Leu	Gln	Cys	Ser	Asp	Trp	Ser	Tyr
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Arg	Pro	Leu	Thr	Glu	Glu	Gln	Lys	Leu	Tyr	Ala	Ala	Thr	Asp	Ala	His
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Cys	Leu	Leu	Gln	Ile	Phe	Asp	Val	Phe	Glu	Ala	His	Leu	Val	Glu	Gly
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Lys	Ala	Thr	Asp	Val	Ile	Arg	Ser	Met	Ser	Glu	Asn	Gly	Gln	Asn	Ile
				245					250					255	
Ala	Asn	Gly	Val	Val	Pro	Arg	Lys	Thr	Thr	Leu	Asn	Thr	Met	Pro	Met
			260					265					270		
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		275					280					285			
Leu	Lys	Glu	Ser	Asp	Leu	Leu	Pro	Lys	Lys	Leu	Lys	Lys	Lys	Thr	Arg
	290					295					300				
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305					310					315					320
Ser	Ala	Asp	Trp	Gln	Gly	Pro	Pro	Pro	Trp	Asp	Ser	Ser	Leu	Gly	Gly
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			340					345					350		
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465					470					475					480	
His	Gln	Leu	Tyr	Trp	Glu	Gly	Thr	Gln	Tyr	His	Asn	Ala	Val	Gln	Lys	
485					490					495						
Phe	Met	Glu	Val	Cys	Lys	Leu	Ser	Glu								
500					505											

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